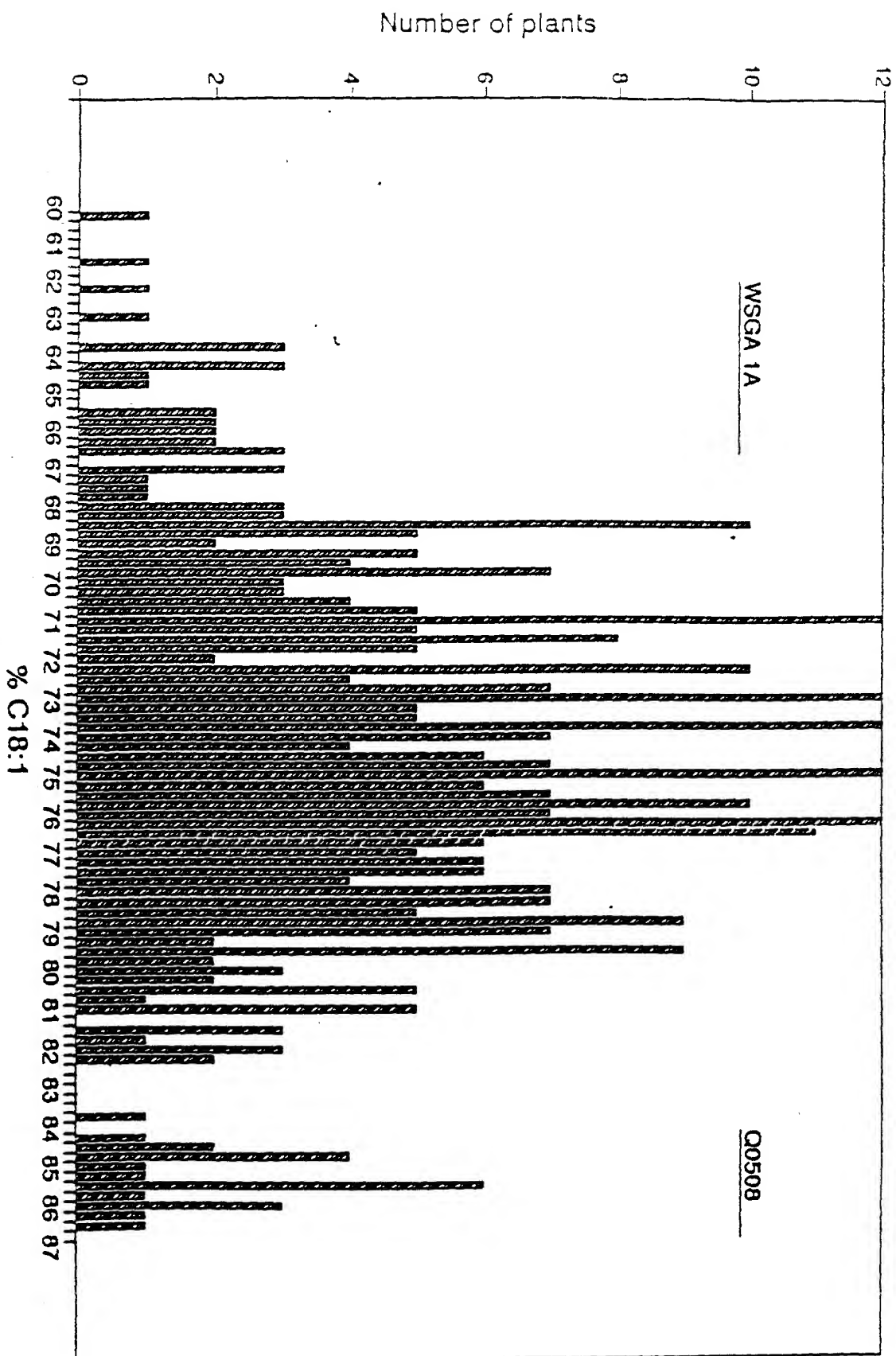


Fig. 1 C18:1 Frequencies
for 92EF (WSGA 1A X Q0508)



0971904 012901

		10	20	30	40	
1	ATGGG	GTGCAGG	TGGAAGA	ATGCAAG	TGTCTCCTC	CCTCCCA Fad2-D wt
1	ATGGG	GTGCAGG	TGGAAGA	ATGCAAG	TGTCTCCTC	CCTCCCA Fad2-D (GA316) IMC129
1	ATGGG	GTGCAGG	TGGAAGA	ATGCAAG	TGTCTCCTC	CCTCCCA Fad2-F wt
1	ATGGG	GTGCAGG	TGGAAGA	ATGCAAG	TGTCTCCTC	CCTCCCA Fad2-F (TA515) Q508
1	ATGGG	GTGCAGG	TGGAAGA	ATGCAAG	TGTCTCCTC	CCTCCCA Fad2-F (GA908) Q4275
		50	60	70	80	
41	AAAAG	TCTTGAA	ACCGACA	ACATCAAG	CGCGTACC	CCTGCGGA Fad2-D wt
41	AAAAG	TCTTGAA	ACCGACA	ACATCAAG	CGCGTACC	CCTGCGGA Fad2-D (GA316) IMC129
41	AGAAG	TCTTGAA	ACCGACA	ACATCAAG	CGCGTACC	CCTGCGGA Fad2-F wt
41	AGAAG	TCTTGAA	ACCGACA	ACATCAAG	CGCGTACC	CCTGCGGA Fad2-F (TA515) Q508
41	AGAAG	TCTTGAA	ACCGACA	ACATCAAG	CGCGTACC	CCTGCGGA Fad2-F (GA908) Q4275
		90	100	110	120	
81	GACAC	CGCCCTT	CACTGT	CGGAGA	ACTCAAG	AAAGCAATC Fad2-D wt
81	GACAC	CGCCCTT	CACTGT	CGGAGA	ACTCAAG	AAAGCAATC Fad2-D (GA316) IMC129
81	GACAC	CGCCCTT	CACTGT	CGGAGA	ACTCAAG	AAAGCAATC Fad2-F wt
81	GACAC	CGCCCTT	CACTGT	CGGAGA	ACTCAAG	AAAGCAATC Fad2-F (TA515) Q508
81	GACAC	CGCCCTT	CACTGT	CGGAGA	ACTCAAG	AAAGCAATC Fad2-F (GA908) Q4275
		130	140	150	160	
121	CCACC	GCAC	TGTTT	CAAAC	GGCTCG	ATCCCTCGCTCTTTCT Fad2-D wt
121	CCACC	GCAC	TGTTT	CAAAC	GGCTCG	ATCCCTCGCTCTTTCT Fad2-D (GA316) IMC129
121	CCACC	GCAC	TGTTT	CAAAC	GGCTCG	ATCCCTCGCTCTTTCT Fad2-F wt
121	CCACC	GCAC	TGTTT	CAAAC	GGCTCG	ATCCCTCGCTCTTTCT Fad2-F (TA515) Q508
121	CCACC	GCAC	TGTTT	CAAAC	GGCTCG	ATCCCTCGCTCTTTCT Fad2-F (GA908) Q4275
		170	180	190	200	
161	CCTAC	CTCAT	CTGGG	GACAT	CATCAT	AGCCTCCTGCTTCTA Fad2-D wt
161	CCTAC	CTCAT	CTGGG	GACAT	CATCAT	AGCCTCCTGCTTCTA Fad2-D (GA316) IMC129
161	CCTAC	CTCAT	CTGGG	GACAT	CATCAT	AGCCTCCTGCTTCTA Fad2-F wt
161	CCTAC	CTCAT	CTGGG	GACAT	CATCAT	AGCCTCCTGCTTCTA Fad2-F (TA515) Q508
161	CCTAC	CTCAT	CTGGG	GACAT	CATCAT	AGCCTCCTGCTTCTA Fad2-F (GA908) Q4275
		210	220	230	240	
201	CTACG	TGCGC	ACCACT	TACTT	CCCTCT	CCTCCCTCAACCT Fad2-D wt
201	CTACG	TGCGC	ACCACT	TACTT	CCCTCT	CCTCCCTCAACCT Fad2-D (GA316) IMC129
201	CTACG	TGCGC	ACCACT	TACTT	CCCTCT	CCTCCCTCAACCT Fad2-F wt
201	CTACG	TGCGC	ACCACT	TACTT	CCCTCT	CCTCCCTCAACCT Fad2-F (TA515) Q508
201	CTACG	TGCGC	ACCACT	TACTT	CCCTCT	CCTCCCTCAACCT Fad2-F (GA908) Q4275
		250	260	270	280	
241	CTCTC	CCTACT	TTCGC	CTGGC	CTCTCT	ACTGGGCGCTGCCAGG Fad2-D wt
241	CTCTC	CCTACT	TTCGC	CTGGC	CTCTCT	ACTGGGCGCTGCCAGG Fad2-D (GA316) IMC129
241	CTCTC	CCTACT	TTCGC	CTGGC	CTCTCT	ACTGGGCGCTGCCAAG Fad2-F wt
241	CTCTC	CCTACT	TTCGC	CTGGC	CTCTCT	ACTGGGCGCTGCCAAG Fad2-F (TA515) Q508
241	CTCTC	CCTACT	TTCGC	CTGGC	CTCTCT	ACTGGGCGCTGCCAAG Fad2-F (GA908) Q4275

FIG. 2A

	290	300	310	320		
281	GCTGCGTCCTAACC	GGCGCTCTGGG	TCATAGCCC	ACGAGT	G	Fad2-D wt
281	GCTGCGTCCTAACC	GGCGCTCTGGG	TCATAGCCC	ACAAGT	G	Fad2-D (GA316) IMC129
281	GGTGGCGTCCTAACC	GGCGCTCTGGG	TCATAGCCC	ACGAGT	G	Fad2-F wt
281	GGTGGCGTCCTAACC	GGCGCTCTGGG	TCATAGCCC	ACGAGT	G	Fad2-F (TA515) Q508
281	GGTGGCGTCCTAACC	GGCGCTCTGGG	TCATAGCCC	ACGAGT	G	Fad2-F (GA908) Q4275
	330	340	350	360		
321	CGGCCACCA	CGCCTTCAGCG	ACTACCA	GTGGCTGGAC	GAC	Fad2-D wt
321	CGGCCACCA	CGCCTTCAGCG	ACTACCA	GTGGCTGGAC	GAC	Fad2-D (GA316) IMC129
321	CGGCCACCA	CGCCTTCAGCG	ACTACCA	GTGGCTTGAC	GAC	Fad2-F wt
321	CGGCCACCA	CGCCTTCAGCG	ACTACCA	GTGGCTTGAC	GAC	Fad2-F (TA515) Q508
321	CGGCCACCA	CGCCTTCAGCG	ACTACCA	GTGGCTTGAC	GAC	Fad2-F (GA908) Q4275
	370	380	390	400		
361	ACCGTCGGGCCT	CATCTTCCACT	CCCTTCCTCCT	CGTCCCTT		Fad2-D wt
361	ACCGTCGGGCCT	CATCTTCCACT	CCCTTCCTCCT	CGTCCCTT		Fad2-D (GA316) IMC129
361	ACCGTCGGGTCT	CATCTTCCACT	CCCTTCCTCCT	CGTCCCTT		Fad2-F wt
361	ACCGTCGGGTCT	CATCTTCCACT	CCCTTCCTCCT	CGTCCCTT		Fad2-F (TA515) Q508
361	ACCGTCGGGTCT	CATCTTCCACT	CCCTTCCTCCT	CGTCCCTT		Fad2-F (GA908) Q4275
	410	420	430	440		
401	ACTTCTCCTT	GGAAGTACAGT	CATCGACG	CCACCATTCC	AA	Fad2-D wt
401	ACTTCTCCTT	GGAAGTACAGT	CATCGACG	CCACCATTCC	AA	Fad2-D (GA316) IMC129
401	ACTTCTCCTT	GGAAGTACAGT	CATCGACG	CCACCATTCC	AA	Fad2-F wt
401	ACTTCTCCTT	GGAAGTACAGT	CATCGACG	CCACCATTCC	AA	Fad2-F (TA515) Q508
401	ACTTCTCCTT	GGAAGTACAGT	CATCGACG	CCACCATTCC	AA	Fad2-F (GA908) Q4275
	450	460	470	480		
441	CACTGGCTCCCT	TCGAGAGAGAC	GGAAGTGTT	TGTCCCCAAG		Fad2-D wt
441	CACTGGCTCCCT	TCGAGAGAGAC	GGAAGTGTT	TGTCCCCAAG		Fad2-D (GA316) IMC129
441	CACTGGCTCCCT	TCGAGAGAGAC	GGAAGTGTT	TGTCCCCAAG		Fad2-F wt
441	CACTGGCTCCCT	TCGAGAGAGAC	GGAAGTGTT	TGTCCCCAAG		Fad2-F (TA515) Q508
441	CACTGGCTCCCT	TCGAGAGAGAC	GGAAGTGTT	TGTCCCCAAG		Fad2-F (GA908) Q4275
	490	500	510	520		
481	AAGAAGTCAGAC	ATCAAGTGGT	ACGGCAAGT	ACCTCAACA		Fad2-D wt
481	AAGAAGTCAGAC	ATCAAGTGGT	ACGGCAAGT	ACCTCAACA		Fad2-D (GA316) IMC129
481	AAGAAGTCAGAC	ATCAAGTGGT	ACGGCAAGT	ACCTCAACA		Fad2-F wt
481	AAGAAGTCAGAC	ATCAAGTGGT	ACGGCAAGT	ACCTCAACA		Fad2-F (TA515) Q508
481	AAGAAGTCAGAC	ATCAAGTGGT	ACGGCAAGT	ACCTCAACA		Fad2-F (GA908) Q4275
	530	540	550	560		
521	ACCCTTTTGGG	ACGCACCGT	GATGTTAAC	GGTTTCAGT	TTCAC	Fad2-D wt
521	ACCCTTTTGGG	ACGCACCGT	GATGTTAAC	GGTTTCAGT	TTCAC	Fad2-D (GA316) IMC129
521	ACCCTTTTGGG	ACGCACCGT	GATGTTAAC	GGTTTCAGT	TTCAC	Fad2-F wt
521	ACCCTTTTGGG	ACGCACCGT	GATGTTAAC	GGTTTCAGT	TTCAC	Fad2-F (TA515) Q508
521	ACCCTTTTGGG	ACGCACCGT	GATGTTAAC	GGTTTCAGT	TTCAC	Fad2-F (GA908) Q4275

FIG. 2B

	570	580	590	600	
561	TCTCGGCTGGCCTTTGTACTTAGCCCTTCAACGTCTCGGGG	Fad2-D wt			
561	TCTCGGCTGGCCTTTGTACTTAGCCCTTCAACGTCTCGGGG	Fad2-D (GA316)	IMC129		
561	TCTCGGCTGGCCTTTGTACTTAGCCCTTCAACGTCTCGGGGA	Fad2-F wt			
561	TCTCGGCTGGCCTTTGTACTTAGCCCTTCAACGTCTCGGGGA	Fad2-F (TA515)	Q508		
561	TCTCGGCTGGCCTTTGTACTTAGCCCTTCAACGTCTCGGGGA	Fad2-F (GA908)	Q4275		
	610	620	630	640	
601	AGACCTTACGACGGCGGGCTTCGCTTGCCATTTCACCCCCA	Fad2-D wt			
601	AGACCTTACGACGGCGGGCTTCGCTTGCCATTTCACCCCCA	Fad2-D (GA316)	IMC129		
601	AGACCTTACGACGGCGGGCTTCGCTTGCCATTTCACCCCCA	Fad2-F wt			
601	AGACCTTACGACGGCGGGCTTCGCTTGCCATTTCACCCCCA	Fad2-F (TA515)	Q508		
601	AGACCTTACGACGGCGGGCTTCGCTTGCCATTTCACCCCCA	Fad2-F (GA908)	Q4275		
	650	660	670	680	
641	ACGCTCCCCTCTACAACGACCGGTGAGCGTCTCCAGATATA	Fad2-D wt			
641	ACGCTCCCCTCTACAACGACCGGTGAGCGTCTCCAGATATA	Fad2-D (GA316)	IMC129		
641	ACGCTCCCCTCTACAACGACCGGTGAGCGTCTCCAGATATA	Fad2-F wt			
641	ACGCTCCCCTCTACAACGACCGGTGAGCGTCTCCAGATATA	Fad2-F (TA515)	Q508		
641	ACGCTCCCCTCTACAACGACCGGTGAGCGTCTCCAGATATA	Fad2-F (GA908)	Q4275		
	690	700	710	720	
681	CATCTCCGACGCTGGCATCCTCGCCGTCTGCTACGGTCTCT	Fad2-D wt			
681	CATCTCCGACGCTGGCATCCTCGCCGTCTGCTACGGTCTCT	Fad2-D (GA316)	IMC129		
681	CATCTCCGACGCTGGCATCCTCGCCGTCTGCTACGGTCTCT	Fad2-F wt			
681	CATCTCCGACGCTGGCATCCTCGCCGTCTGCTACGGTCTCT	Fad2-F (TA515)	Q508		
681	CATCTCCGACGCTGGCATCCTCGCCGTCTGCTACGGTCTCT	Fad2-F (GA908)	Q4275		
	730	740	750	760	
721	TACCGCTACGCTGCTGTCCAAGGAGTTGCCCTCGATGGTCT	Fad2-D wt			
721	TACCGCTACGCTGCTGTCCAAGGAGTTGCCCTCGATGGTCT	Fad2-D (GA316)	IMC129		
721	TTCCGTTACGCCCGCCGCGCAGGGAGTGGCCTCGATGGTCT	Fad2-F wt			
721	TTCCGTTACGCCCGCCGCGCAGGGAGTGGCCTCGATGGTCT	Fad2-F (TA515)	Q508		
721	TTCCGTTACGCCCGCCGCGCAGGGAGTGGCCTCGATGGTCT	Fad2-F (GA908)	Q4275		
	770	780	790	800	
761	GCTTCTACGGAGTTCCTCTTCTGATTGTCAACGGGTTCCTT	Fad2-D wt			
761	GCTTCTACGGAGTTCCTCTTCTGATTGTCAACGGGTTCCTT	Fad2-D (GA316)	IMC129		
761	GCTTCTACGGAGTTCCTCTTCTGATTGTCAATGGTTTCCTT	Fad2-F wt			
761	GCTTCTACGGAGTTCCTCTTCTGATTGTCAATGGTTTCCTT	Fad2-F (TA515)	Q508		
761	GCTTCTACGGAGTTCCTCTTCTGATTGTCAATGGTTTCCTT	Fad2-F (GA908)	Q4275		
	810	820	830	840	
801	AGTTTTGATCACTTACTTGCAGCACACGCGATCCTTCCCTTG	Fad2-D wt			
801	AGTTTTGATCACTTACTTGCAGCACACGCGATCCTTCCCTTG	Fad2-D (GA316)	IMC129		
801	CGTGTTGATCACTTACTTGCAGCACACGCGATCCTTCCCTTG	Fad2-F wt			
801	CGTGTTGATCACTTACTTGCAGCACACGCGATCCTTCCCTTG	Fad2-F (TA515)	Q508		
801	CGTGTTGATCACTTACTTGCAGCACACGCGATCCTTCCCTTG	Fad2-F (GA908)	Q4275		

FIG. 2C

	850	860	870	880	
841	CCTCACTATGACTCGTCTGAGTGGGATTGGTTGAGGGGAG	Fad2-D wt			
841	CCTCACTATGACTCGTCTGAGTGGGATTGGTTGAGGGGAG	Fad2-D (GA316) IMC129			
841	CCTCACTACGATTTCGTCCGAGTGGGATTGGTTGAGGGGAG	Fad2-F wt			
841	CCTCACTACGATTTCGTCCGACTGGGATTGGTTGAGGGGAG	Fad2-F (TA515) Q508			
841	CCTCACTACGATTTCGTCCGAGTGGGATTGGTTGAGGGGAG	Fad2-F (GA908) Q4275			
	890	900	910	920	
881	CTTTGGCCACCGTTGACAGAGACTACCGAATCTTGAACAA	Fad2-D wt			
881	CTTTGGCCACCGTTGACAGAGACTACCGAATCTTGAACAA	Fad2-D (GA316) IMC129			
881	CTTTGGCTACCGTTGACAGAGACTACCGAATCTTGAACAA	Fad2-F wt			
881	CTTTGGCTACCGTTGACAGAGACTACCGAATCTTGAACAA	Fad2-F (TA515) Q508			
881	CTTTGGCTACCGTTGACAGAGACTACGAAATCTTGAACAA	Fad2-F (GA908) Q4275			
	930	940	950	960	
921	GGTCTTCCACAATATCACGGACACGGCACGTTGGCGCATCAC	Fad2-D wt			
921	GGTCTTCCACAATATCACGGACACGGCACGTTGGCGCATCAC	Fad2-D (GA316) IMC129			
921	GGTCTTCCACAATATTACCGACACGGCACGTTGGCGCATCAT	Fad2-F wt			
921	GGTCTTCCACAATATTACCGACACGGCACGTTGGCGCATCAT	Fad2-F (TA515) Q508			
921	GGTCTTCCACAATATTACCGACACGGCACGTTGGCGCATCAT	Fad2-F (GA908) Q4275			
	970	980	990	1000	
961	CTGTTCTCGACCATGCCGCAATTATCATGCGATGGAAGCTA	Fad2-D wt			
961	CTGTTCTCGACCATGCCGCAATTATCATGCGATGGAAGCTA	Fad2-D (GA316) IMC129			
961	CTGTTCTCCACGATGCCGCAATTATCACGCGATGGAAGCTA	Fad2-F wt			
961	CTGTTCTCCACGATGCCGCAATTATCACGCGATGGAAGCTA	Fad2-F (TA515) Q508			
961	CTGTTCTCCACGATGCCGCAATTATCACGCGATGGAAGCTA	Fad2-F (GA908) Q4275			
	1010	1020	1030	1040	
1001	CGAAGGCGGATAAAGCCGATACTGGGAGAGTATTATCAGTT	Fad2-D wt			
1001	CGAAGGCGGATAAAGCCGATACTGGGAGAGTATTATCAGTT	Fad2-D (GA316) IMC129			
1001	CCAAGGCGGATAAAGCCGATACTGGGAGAGTATTATCAGTT	Fad2-F wt			
1001	CCAAGGCGGATAAAGCCGATACTGGGAGAGTATTATCAGTT	Fad2-F (TA515) Q508			
1001	CCAAGGCGGATAAAGCCGATACTGGGAGAGTATTATCAGTT	Fad2-F (GA908) Q4275			
	1050	1060	1070	1080	
1041	CGATGGGACGCCCGGTGGTTAAGGCGATGTGGAGGGAGGGCG	Fad2-D wt			
1041	CGATGGGACGCCCGGTGGTTAAGGCGATGTGGAGGGAGGGCG	Fad2-D (GA316) IMC129			
1041	CGATGGGACGCCCGGTGGTTAAGGCGATGTGGAGGGAGGGCG	Fad2-F wt			
1041	CGATGGGACGCCCGGTGGTTAAGGCGATGTGGAGGGAGGGCG	Fad2-F (TA515) Q508			
1041	CGATGGGACGCCCGGTGGTTAAGGCGATGTGGAGGGAGGGCG	Fad2-F (GA908) Q4275			
	1090	1100	1110	1120	
1081	AAGGAGTGTATCTATGTGGAACCGGACAGGCAAGGTGAGA	Fad2-D wt			
1081	AAGGAGTGTATCTATGTGGAACCGGACAGGCAAGGTGAGA	Fad2-D (GA316) IMC129			
1081	AAGCAGTGTATCTATGTGGAACCGGACAGGCAAGGTGAGA	Fad2-F wt			
1081	AAGGAGTGTATCTATGTGGAACCGGACAGGCAAGGTGAGA	Fad2-F (TA515) Q508			
1081	AAGCAGTGTATCTATGTGGAACCGGACAGGCAAGGTGAGA	Fad2-F (GA908) Q4275			

FIG. 2D

	1130	1140	1150
1121	AGAAAGGTGTGTTCTGGTACAACAATAAGTTATGA		
1121	AGAAAGGTGTGTTCTGGTACAACAATAAGTTATGA		
1121	AGAAAGGTGTGTTCTGGTACAACAATAAGTTATGA		
1121	AGAAAGGTGTGTTCTGGTACAACAATAAGTTATGA		
1121	AGAAAGGTGTGTTCTGGTACAACAATAAGTTATGA		

Fad2-D wt
 Fad2-D (GA316) TMC129
 Fad2-F wt
 Fad2-F (TA515) Q508
 Fad2-F (GA908) Q4275

FIG. 2E

105270-4067469

	10	20	
1	Met Gly Ala Gly Gly Arg Met Gln Val Ser Pro Pro Ser Lys Lys Ser Glu Thr Asp Asn	Fad2-D wt	
1	Met Gly Ala Gly Gly Arg Met Gln Val Ser Pro Pro Ser Lys Lys Ser Glu Thr Asp Asn	Fad2-D (GA316) IMC129	
1	Met Gly Ala Gly Gly Arg Met Gln Val Ser Pro Pro Ser Lys Lys Ser Glu Thr Asp Thr	Fad2-F wt	
1	Met Gly Ala Gly Gly Arg Met Gln Val Ser Pro Pro Ser Lys Lys Ser Glu Thr Asp Thr	Fad2-F (TA515) Q508	
1	Met Gly Ala Gly Gly Arg Met Gln Val Ser Pro Pro Ser Lys Lys Ser Glu Thr Asp Thr	Fad2-F (GA908) Q4275	
	30	40	
61	Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr Val Gly Glu Leu Lys Lys Ala Ile	Fad2-D wt	
61	Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr Val Gly Glu Leu Lys Lys Ala Ile	Fad2-D (GA316) IMC129	
61	Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr Val Gly Glu Leu Lys Lys Ala Ile	Fad2-F wt	
61	Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr Val Gly Glu Leu Lys Lys Ala Ile	Fad2-F (TA515) Q508	
61	Ile Lys Arg Val Pro Cys Glu Thr Pro Pro Phe Thr Val Gly Glu Leu Lys Lys Ala Ile	Fad2-F (GA908) Q4275	
	50	60	
121	Pro Pro His Cys Phe Lys Arg Ser Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile	Fad2-D wt	
121	Pro Pro His Cys Phe Lys Arg Ser Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile	Fad2-D (GA316) IMC129	
121	Pro Pro His Cys Phe Lys Arg Ser Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile	Fad2-F wt	
121	Pro Pro His Cys Phe Lys Arg Ser Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile	Fad2-F (TA515) Q508	
121	Pro Pro His Cys Phe Lys Arg Ser Ile Pro Arg Ser Phe Ser Tyr Leu Ile Trp Asp Ile	Fad2-F (GA908) Q4275	
	70	80	
181	Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro	Fad2-D wt	
181	Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro	Fad2-D (GA316) IMC129	
181	Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro	Fad2-F wt	
181	Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro	Fad2-F (TA515) Q508	
181	Ile Ile Ala Ser Cys Phe Tyr Tyr Val Ala Thr Thr Tyr Phe Pro Leu Leu Pro His Pro	Fad2-F (GA908) Q4275	
	90	100	
241	Leu Ser Tyr Phe Ala Trp Pro Leu Tyr Trp Ala Cys Gln Gly Cys Val Leu Thr Gly Val	Fad2-D wt	
241	Leu Ser Tyr Phe Ala Trp Pro Leu Tyr Trp Ala Cys Gln Gly Cys Val Leu Thr Gly Val	Fad2-D (GA316) IMC129	
241	Leu Ser Tyr Phe Ala Trp Pro Leu Tyr Trp Ala Cys Gln Gly Cys Val Leu Thr Gly Val	Fad2-F wt	
241	Leu Ser Tyr Phe Ala Trp Pro Leu Tyr Trp Ala Cys Gln Gly Cys Val Leu Thr Gly Val	Fad2-F (TA515) Q508	
241	Leu Ser Tyr Phe Ala Trp Pro Leu Tyr Trp Ala Cys Gln Gly Cys Val Leu Thr Gly Val	Fad2-F (GA908) Q4275	
	110	120	
301	Trp Val Ile Ala His Glu Cys Gly His His Ala Phe Ser Asp Tyr Gln Trp Leu Asp Asp	Fad2-D wt	
301	Trp Val Ile Ala His Lys Cys Gly His His Ala Phe Ser Asp Tyr Gln Trp Leu Asp Asp	Fad2-D (GA316) IMC129	
301	Trp Val Ile Ala His Glu Cys Gly His His Ala Phe Ser Asp Tyr Gln Trp Leu Asp Asp	Fad2-F wt	
301	Trp Val Ile Ala His Glu Cys Gly His His Ala Phe Ser Asp Tyr Gln Trp Leu Asp Asp	Fad2-F (TA515) Q508	
301	Trp Val Ile Ala His Glu Cys Gly His His Ala Phe Ser Asp Tyr Gln Trp Leu Asp Asp	Fad2-F (GA908) Q4275	
	130	140	
361	Thr Val Gly Leu Ile Phe His Ser Phe Leu Leu Val Pro Tyr Phe Ser Trp Lys Tyr Ser	Fad2-D wt	
361	Thr Val Gly Leu Ile Phe His Ser Phe Leu Leu Val Pro Tyr Phe Ser Trp Lys Tyr Ser	Fad2-D (GA316) IMC129	
361	Thr Val Gly Leu Ile Phe His Ser Phe Leu Leu Val Pro Tyr Phe Ser Trp Lys Tyr Ser	Fad2-F wt	
361	Thr Val Gly Leu Ile Phe His Ser Phe Leu Leu Val Pro Tyr Phe Ser Trp Lys Tyr Ser	Fad2-F (TA515) Q508	
361	Thr Val Gly Leu Ile Phe His Ser Phe Leu Leu Val Pro Tyr Phe Ser Trp Lys Tyr Ser	Fad2-F (GA908) Q4275	

FIG. 3A

150										160												
421	His	Arg	Arg	His	His	Ser	Asn	Thr	Gly	Ser	Leu	Glu	Arg	Asp	Glu	Val	Phe	Val	Pro	Lys	Fad2-D	wt
421	His	Arg	Arg	His	His	Ser	Asn	Thr	Gly	Ser	Leu	Glu	Arg	Asp	Glu	Val	Phe	Val	Pro	Lys	Fad2-D	(GA316) IMC129
421	His	Arg	Arg	His	His	Ser	Asn	Thr	Gly	Ser	Leu	Glu	Arg	Asp	Glu	Val	Phe	Val	Pro	Lys	Fad2-F	wt
421	His	Arg	Arg	His	His	Ser	Asn	Thr	Gly	Ser	Leu	Glu	Arg	Asp	Glu	Val	Phe	Val	Pro	Lys	Fad2-F	(TA515) Q508
421	His	Arg	Arg	His	His	Ser	Asn	Thr	Gly	Ser	Leu	Glu	Arg	Asp	Glu	Val	Phe	Val	Pro	Lys	Fad2-F	(GA908) Q4275
170										180												
481	Lys	Lys	Ser	Asp	Ile	Lys	Trp	Tyr	Gly	Lys	Tyr	Leu	Asn	Asn	Pro	Leu	Gly	Arg	Thr	Val	Fad2-D	wt
481	Lys	Lys	Ser	Asp	Ile	Lys	Trp	Tyr	Gly	Lys	Tyr	Leu	Asn	Asn	Pro	Leu	Gly	Arg	Thr	Val	Fad2-D	(GA316) IMC129
481	Lys	Lys	Ser	Asp	Ile	Lys	Trp	Tyr	Gly	Lys	Tyr	Leu	Asn	Asn	Pro	Leu	Gly	Arg	Thr	Val	Fad2-F	wt
481	Lys	Lys	Ser	Asp	Ile	Lys	Trp	Tyr	Gly	Lys	Tyr	His	Asn	Asn	Pro	Leu	Gly	Arg	Thr	Val	Fad2-F	(TA515) Q508
481	Lys	Lys	Ser	Asp	Ile	Lys	Trp	Tyr	Gly	Lys	Tyr	Leu	Asn	Asn	Pro	Leu	Gly	Arg	Thr	Val	Fad2-F	(GA908) Q4275
190										200												
541	Met	Leu	Thr	Val	Gln	Phe	Thr	Leu	Gly	Trp	Pro	Leu	Tyr	Leu	Ala	Phe	Asn	Val	Ser	Gly	Fad2-D	wt
541	Met	Leu	Thr	Val	Gln	Phe	Thr	Leu	Gly	Trp	Pro	Leu	Tyr	Leu	Ala	Phe	Asn	Val	Ser	Gly	Fad2-D	(GA316) IMC129
541	Met	Leu	Thr	Val	Gln	Phe	Thr	Leu	Gly	Trp	Pro	Leu	Tyr	Leu	Ala	Phe	Asn	Val	Ser	Gly	Fad2-F	wt
541	Met	Leu	Thr	Val	Gln	Phe	Thr	Leu	Gly	Trp	Pro	Leu	Tyr	Leu	Ala	Phe	Asn	Val	Ser	Gly	Fad2-F	(TA515) Q508
541	Met	Leu	Thr	Val	Gln	Phe	Thr	Leu	Gly	Trp	Pro	Leu	Tyr	Leu	Ala	Phe	Asn	Val	Ser	Gly	Fad2-F	(GA908) Q4275
210										220												
601	Arg	Pro	Tyr	Asp	Gly	Gly	Phe	Ala	Cys	His	Phe	His	Pro	Asn	Ala	Pro	Ile	Tyr	Asn	Asp	Fad2-D	wt
601	Arg	Pro	Tyr	Asp	Gly	Gly	Phe	Ala	Cys	His	Phe	His	Pro	Asn	Ala	Pro	Ile	Tyr	Asn	Asp	Fad2-D	(GA316) IMC129
601	Arg	Pro	Tyr	Asp	Gly	Gly	Phe	Ala	Cys	His	Phe	His	Pro	Asn	Ala	Pro	Ile	Tyr	Asn	Asp	Fad2-F	wt
601	Arg	Pro	Tyr	Asp	Gly	Gly	Phe	Ala	Cys	His	Phe	His	Pro	Asn	Ala	Pro	Ile	Tyr	Asn	Asp	Fad2-F	(TA515) Q508
601	Arg	Pro	Tyr	Asp	Gly	Gly	Phe	Ala	Cys	His	Phe	His	Pro	Asn	Ala	Pro	Ile	Tyr	Asn	Asp	Fad2-F	(GA908) Q4275
230										240												
661	Arg	Glu	Arg	Leu	Gln	Ile	Tyr	Ile	Ser	Asp	Ala	Gly	Ile	Leu	Ala	Val	Cys	Tyr	Gly	Leu	Fad2-D	wt
661	Arg	Glu	Arg	Leu	Gln	Ile	Tyr	Ile	Ser	Asp	Ala	Gly	Ile	Leu	Ala	Val	Cys	Tyr	Gly	Leu	Fad2-D	(GA316) IMC129
661	Arg	Glu	Arg	Leu	Gln	Ile	Tyr	Ile	Ser	Asp	Ala	Gly	Ile	Leu	Ala	Val	Cys	Tyr	Gly	Leu	Fad2-F	wt
661	Arg	Glu	Arg	Leu	Gln	Ile	Tyr	Ile	Ser	Asp	Ala	Gly	Ile	Leu	Ala	Val	Cys	Tyr	Gly	Leu	Fad2-F	(TA515) Q508
661	Arg	Glu	Arg	Leu	Gln	Ile	Tyr	Ile	Ser	Asp	Ala	Gly	Ile	Leu	Ala	Val	Cys	Tyr	Gly	Leu	Fad2-F	(GA908) Q4275
250										260												
721	Tyr	Arg	Tyr	Ala	Ala	Val	Gln	Gly	Val	Ala	Ser	Met	Val	Cys	Phe	Tyr	Gly	Val	Pro	Leu	Fad2-D	wt
721	Tyr	Arg	Tyr	Ala	Ala	Val	Gln	Gly	Val	Ala	Ser	Met	Val	Cys	Phe	Tyr	Gly	Val	Pro	Leu	Fad2-D	(GA316) IMC129
721	Phe	Arg	Tyr	Ala	Ala	Ala	Gln	Gly	Val	Ala	Ser	Met	Val	Cys	Phe	Tyr	Gly	Val	Pro	Leu	Fad2-F	wt
721	Phe	Arg	Tyr	Ala	Ala	Ala	Gln	Gly	Val	Ala	Ser	Met	Val	Cys	Phe	Tyr	Gly	Val	Pro	Leu	Fad2-F	(TA515) Q508
721	Phe	Arg	Tyr	Ala	Ala	Ala	Gln	Gly	Val	Ala	Ser	Met	Val	Cys	Phe	Tyr	Gly	Val	Pro	Leu	Fad2-F	(GA908) Q4275
270										280												
781	Leu	Ile	Val	Asn	Gly	Phe	Leu	Val	Leu	Ile	Thr	Tyr	Leu	Gln	His	Thr	His	Pro	Ser	Leu	Fad2-D	wt
781	Leu	Ile	Val	Asn	Gly	Phe	Leu	Val	Leu	Ile	Thr	Tyr	Leu	Gln	His	Thr	His	Pro	Ser	Leu	Fad2-D	(GA316) IMC129
781	Leu	Ile	Val	Asn	Gly	Phe	Leu	Val	Leu	Ile	Thr	Tyr	Leu	Gln	His	Thr	His	Pro	Ser	Leu	Fad2-F	wt
781	Leu	Ile	Val	Asn	Gly	Phe	Leu	Val	Leu	Ile	Thr	Tyr	Leu	Gln	His	Thr	His	Pro	Ser	Leu	Fad2-F	(TA515) Q508
781	Leu	Ile	Val	Asn	Gly	Phe	Leu	Val	Leu	Ile	Thr	Tyr	Leu	Gln	His	Thr	His	Pro	Ser	Leu	Fad2-F	(GA908) Q4275

FIG. 3B

	290	300	
841	Pro His Tyr Asp Ser Ser Glu Trp Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg	Fad2-D wt	
841	Pro His Tyr Asp Ser Ser Glu Trp Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg	Fad2-D (GA316)	IMC129
841	Pro His Tyr Asp Ser Ser Glu Trp Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg	Fad2-F wt	
841	Pro His Tyr Asp Ser Ser Glu Trp Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg	Fad2-F (TA515)	Q508
841	Pro His Tyr Asp Ser Ser Glu Trp Asp Trp Leu Arg Gly Ala Leu Ala Thr Val Asp Arg	Fad2-F (GA908)	Q4275
	310	320	
901	Asp Tyr Gly Ile Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His	Fad2-D wt	
901	Asp Tyr Gly Ile Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His	Fad2-D (GA316)	IMC129
901	Asp Tyr Gly Ile Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His	Fad2-F wt	
901	Asp Tyr Gly Ile Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His	Fad2-F (TA515)	Q508
901	Asp Tyr Glu Ile Leu Asn Lys Val Phe His Asn Ile Thr Asp Thr His Val Ala His His	Fad2-F (GA908)	Q4275
	330	340	
961	Leu Phe Ser Thr Met Pro His Tyr His Ala Met Glu Ala Thr Lys Ala Ile Lys Pro Ile	Fad2-D wt	
961	Leu Phe Ser Thr Met Pro His Tyr His Ala Met Glu Ala Thr Lys Ala Ile Lys Pro Ile	Fad2-D (GA316)	IMC129
961	Leu Phe Ser Thr Met Pro His Tyr His Ala Met Glu Ala Thr Lys Ala Ile Lys Pro Ile	Fad2-F wt	
961	Leu Phe Ser Thr Met Pro His Tyr His Ala Met Glu Ala Thr Lys Ala Ile Lys Pro Ile	Fad2-F (TA515)	Q508
961	Leu Phe Ser Thr Met Pro His Tyr His Ala Met Glu Ala Thr Lys Ala Ile Lys Pro Ile	Fad2-F (GA908)	Q4275
	350	360	
1021	Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala	Fad2-D wt	
1021	Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala	Fad2-D (GA316)	IMC129
1021	Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala	Fad2-F wt	
1021	Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala	Fad2-F (TA515)	Q508
1021	Leu Gly Glu Tyr Tyr Gln Phe Asp Gly Thr Pro Val Val Lys Ala Met Trp Arg Glu Ala	Fad2-F (GA908)	Q4275
	370	380	
1081	Lys Glu Cys Ile Tyr Val Glu Pro Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr	Fad2-D wt	
1081	Lys Glu Cys Ile Tyr Val Glu Pro Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr	Fad2-D (GA316)	IMC129
1081	Lys Glu Cys Ile Tyr Val Glu Pro Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr	Fad2-F wt	
1081	Lys Glu Cys Ile Tyr Val Glu Pro Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr	Fad2-F (TA515)	Q508
1081	Lys Glu Cys Ile Tyr Val Glu Pro Asp Arg Gln Gly Glu Lys Lys Gly Val Phe Trp Tyr	Fad2-F (GA908)	Q4275
1141	Asn Asn Lys Leu ter	Fad2-D wt	
1141	Asn Asn Lys Leu ter	Fad2-D (GA316)	IMC129
1141	Asn Asn Lys Leu ter	Fad2-F wt	
1141	Asn Asn Lys Leu ter	Fad2-F (TA515)	Q508
1141	Asn Asn Lys Leu ter	Fad2-F (GA908)	Q4275

FIG. 3C